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54 **A paste dispenser.**

57 A hand-held paste dispenser (1) is disclosed which has a discharge means (3) actuated by a cap (5) for the dispenser. For dispensing, the cap (5) is removed from the discharge end and pushed over the rear portion, in which position a key (13) engages a recess (10) in a threaded drive spindle of the discharge means. The cap is then rotated to dispense paste and rotation is limited by stops (16,17) so that a metered "measure" may be dispensed. The dispenser may also include a paste applicator head (32) to form a reservoir toothbrush. Because engagement between the cap and discharge means is required, accidental discharge resulting in blocking of the outlet and lack of cleanliness is avoided and the dispenser is tamper-proof for young children. Further, the dispenser allows control of the amount discharged which is important for avoiding waste and in discharging an exact required amount of paste.

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The present invention relates to paste dispensers, and more particularly to hand-held paste dispensers of the type having a container and a discharge means for discharging paste from the container.

In this specification, the term "paste" is intended to cover any type of fluid having a relatively high viscosity such as cream, ointment, dentifrice or gel.

Presently available paste dispensers of this type may be represented by those described in United Kingdom Patent Specification Nos. 2,070,922A (Lingner and Fischer) and 2,207,640A (Mansfield). In both cases, the discharge means is of the type having a piston driven by a hand-operated spindle. We have found that such paste dispensers are not satisfactory because paste may be inadvertently dispensed. For example, in the reservoir toothbrush of the Lingner and Fischer Patent Specification the knurled knob could be rotated accidentally resulting in the discharge of toothpaste. It appears that this is both unhygienic and would block ducts in the toothbrush head by hardening of accidentally discharged dentifrice. We believe that these are the primary reasons why reservoir toothbrushes have not gained widespread usage. It is also desirable in many circumstances to prevent young children from dispensing paste that may be harmful to them, and thus presently available paste dispensers are unsuitable.

The present invention is directed towards providing a hand-held paste dispenser to overcome these problems.

According to the invention, there is provided a hand-held paste dispenser comprising:-  
a paste container having a discharge outlet;  
a discharge means mounted within the container for discharging paste from the container through the discharge outlet; and  
actuating means for the discharge means comprising a cap for the discharge outlet, the cap being releasably mountable to the container.

Because the cap forms the actuating means for the discharge means the dispenser is tamper-proof for young children and paste will not be accidentally discharged, thus avoiding blocking of the discharge outlet and lack of cleanliness.

In one embodiment, the discharge means comprises a piston mounted within the container and driven by a rotating drive member, and wherein said cap includes means for engaging said drive member for rotation thereof to discharge paste from the container through the discharge outlet. Preferably, the cap includes a male key or a female recess and the drive member includes the other of the male key or female recess for engagement of the cap and the drive member. In this latter embodiment, the cap includes a key for en-

gagement with a recess in the drive member.

This is a particularly simple and inexpensive manner of carrying out the invention and utilises known arrangements with relatively few modifications.

Ideally, said means for engaging the cap and the drive member is effective for one direction of rotation only.

In one embodiment, said recess extends in a radial direction from a longitudinal axis of the drive member and includes a stop surface on one side thereof and a sloping surface on the other side to allow engagement for rotation of the drive member only in a direction for causing discharge of paste from the container.

These embodiments achieve the advantages of preventing "reversing" of the piston, thus allowing greater control of paste discharge. They also make the dispenser suitable for young children, provided they are shown how to operate it.

In another embodiment, the dispenser includes metering means for indicating the quantity of paste discharged. In this embodiment, said metering means preferably comprises stop means retractably engageable with said discharge means or said actuating means to limit movement of said piston for any one use of the dispenser. Ideally, said stop means is mounted on the container for limiting rotation of said cap.

By allowing a user control the amount of paste discharged, the disadvantages of discharging excessive paste resulting in waste and possible harmful effects are avoided.

Preferably, the container and the cap include in one or the other thereof an inter-engaging recess, and a projection in the other thereof, rotation of the cap being limited by movement of the projection within the recess.

This is a particularly simple and convenient arrangement.

In another embodiment, said metering means includes graduation markings on the container for indicating the extent of rotation of said cap. This allows precise user control, which is important in some situations.

In a further embodiment the paste dispenser further comprises an applicator head for application of paste discharged through the discharge outlet. The applicator head preferably includes bristles to form a toothbrush head having a duct for delivery of paste from the discharge outlet to the bristles.

By connection of a toothbrush head, the dispenser forms a reservoir toothbrush with all of the above-mentioned advantages.

Ideally, the container and the discharge means form a cartridge for releasable connection with the applicator head.

Preferably, the cartridge and applicator head

include interengageable bayonet type fittings for releasable connection.

This is a convenient arrangement for consumer use.

The duct is preferably arranged to discharge dentrifice transversely of the bristles.

It has been found that paste is distributed evenly in this manner, and a straight duct in the toothbrush head may be used.

In one embodiment, the toothbrush head includes radially arranged bristles and a plurality of radially arranged duct openings for interproximal teeth cleaning.

This toothbrush head is particularly effective for interproximal cleaning.

According to another aspect of the invention, there is provided a hand-held paste dispenser comprising:-

a paste container having a discharge outlet; a discharge means having a user-operated drive member; and

metering means for indicating the extent of movement of the drive member to allow user control of the quantity of paste discharged.

By providing for metered dosing, the invention is suitable where paste is expensive or where it is important that dispensed quantities are known.

In this specification, the term "piston" is intended to cover any member actuated to urge paste from a container.

The invention will be more clearly understood from the following description of some preferred embodiments thereof, given by way of example only with reference to the accompanying drawings in which;

Figs 1(a), 1(b) and 2 are perspective, cross-sectional, and end views respectively of a paste dispenser of the invention;

Figs. 3 and 4 are perspective and cross-sectional views respectively of an alternative construction of paste dispenser of the invention;

Figs. 5 and 6 are perspective and cross-sectional views of a paste dispenser forming a reservoir toothbrush;

Fig. 7 is a perspective view of an alternative construction of applicator head for a paste dispenser; and

Figs. 8(a) and 8(b) are perspective and end views respectively of an interproximal brush head for use with the applicator head of Fig 7.

Referring to the drawings, and initially to Figs. 1(a), 1(b) and 2 there is illustrated a paste dispenser of the invention indicated generally by the reference numeral 1. The paste dispenser 1 comprises a substantially rigid tubular container 2 housing a discharge means 3 for discharge of paste from the container through a discharge outlet 4, adjacent which the container 2 is tapered. The

dispenser 1 also includes a cap 5 for surrounding the discharge outlet 4.

The discharge means 3 comprises a piston 6 which fits neatly within the container 2 and is mounted on an axially disposed threaded spindle 7 forming a drive member which is integral with a rotatable base 9 for the container 2. The exterior surface of the rotatable base 9 includes three radially extending recesses 10, each of which is bounded by a stop surface 11 on one side and a rearwardly and upwardly sloping surface 12 on the other side. The recesses 10 are for female engagement with an actuating key 13 forming an integral part of the cap 5.

In this embodiment, metering means for the paste dispenser comprises a band 15 surrounding the container 2 and having an elongate recess 16 for retractable engagement with a projection 17 on the cap 5 when the cap is pushed over the rear of the dispenser for discharge of paste. The band 15 also includes a slot 18 for reception of the projection 17 when the dispenser 1 is not in use and the cap 5 is over the front end surrounding the discharge outlet 4.

When it is desired to use the paste dispenser 1, the cap 5 is removed from the front end and pushed over the rear end until the projection 17 engages the recess 16 at the anti-clockwise extremity thereof. In this position, the key 13 engages one of the recesses 10 in the rotatable base 9. Rotation of the cap 5 in the clockwise direction will rotate the rotatable base 9 by engagement between the key 13 and the respective stop surface 11 to effect longitudinal movement of the piston 6 mounted on the threaded spindle 7. This movement will urge paste out of the discharge outlet 4. Rotation of the rotatable base 9 will only be effected when the key 13 is rotated against the stops 11 and not against the sloping surfaces 12 so that rotation in one direction only, namely, that for discharge of paste is permitted. This movement is continued until the projection 17 reaches the clockwise extremity of the recess 16 in which case 1 ml of paste has been dispensed and further dispensing is prevented. If it is desired to dispense more paste it is necessary to retract the cap 5 and repeat the procedure. When this is done, the key 13 will be in line with the "next" recess 10. If the cap 5 is rotated in the anti-clockwise direction, the key 13 will simply move along the sloping surfaces 12 and will not cause rotation of the rotatable base 9.

It will be appreciated that because the discharge means is actuated by the cap, accidental discharge will not happen if, for example, the dispenser is held in one's pocket. This is important for maintaining hygiene around the discharge outlet and preventing blockage thereof. Further, young

children would be unable to discharge paste unless specifically authorised and shown how the dispenser operates. This is an important aspect of the invention, especially if pharmaceutical derivatives are stored in the dispenser.

Finally, it will be appreciated that the paste dispenser is simple to manufacture as there are relatively few parts.

It will also be appreciated that the paste dispenser of the invention allows dispensing of a metered quantity of paste in a relatively simple manner. This is very important where the paste is relatively expensive and it is important to avoid waste or where excessive discharge may be harmful.

Referring now to Figs. 3 and 4 there is illustrated an alternative construction of paste dispenser of the invention indicated generally by the reference numeral 20. To avoid repetition, parts similar to, or which serve the same function as parts referred to in the previous drawings are identified by the same reference numerals. The dispenser 20 comprises a tubular container 21 having a curved front end leading to a transverse discharge outlet 23. A band 24 surrounding the container 21 includes a recess 25 and graduation marks 26 adjacent the recess 25 for indicating the quantity of paste discharged according to alignment with a line 27 on a projection 28 of a cap 29.

It will be appreciated that if it is not desired to discharge a full "measure" of paste, known quantities below this amount may be discharged. Further, the arrangement of transverse discharge outlet 23 may be suitable in certain situations. The container 21 is shorter and has a larger diameter than the container 2. Indeed, it is envisaged that many different shapes and sizes may be used, depending on the circumstances. For example, a wider diameter would be suitable for children having a "palm grip".

Referring now to Figs. 5 and 6 there is illustrated a further paste dispenser of the invention indicated generally by the reference numeral 30. The paste dispenser 30 is in the form of a reservoir toothbrush and parts similar to those described with reference to the previous drawings are identified by the same reference numerals. The dispenser 30 comprises a tubular container 31 onto which is mounted a paste applicator head, in this case a toothbrush head 32. The container 31 has a discharge outlet 33 communicating with a longitudinal duct 34 in the toothbrush head 32. The duct 34 has an opening 35 disposed transversely of bristles 36 mounted on the toothbrush head 32. The toothbrush head 32 connects with the container 31 by way of a bayonet fitting having a slot 37 in the container 2 and a key 38 on the toothbrush head 32. The container 31 thus forms a removable den-

tifrice cartridge and the connection is relatively easily made by the bayonet fitting. A cap 39 is provided for the brush head 32 which incorporates a double-skin venting arrangement 40, which helps to maintain hygiene of the bristles 36 by allowing ventilation while preventing water escape after washing.

It will be appreciated that the invention overcomes the problem of accidental discharge of dentifrice which has heretofore caused blocking of the discharge ducts and is not hygienic. We believe that this is one of the major reasons why reservoir toothbrushes have not gained wide usage despite being available for many years. What the invention provides is a reservoir toothbrush which is simple to use, is hygienic in operation and which prevents clogging of ducts. Further, the reservoir toothbrush illustrated will prevent excessive discharge of dentifrice at any one use. This is important for cleaning of children's teeth because fluoride in dentifrice may be harmful and further, waste of dentifrice for adult use is avoided.

Referring now to Fig. 7 there is illustrated an intermediate fixture for the paste dispenser 30, indicated generally by the reference numeral 50. The intermediate fixture 50 includes a stem 51 having a narrow end portion 52 arranged for a force-fit within an applicator head such as a brush head. A brush head 53 having a conventional bristle arrangement is illustrated. Referring to Figs. 8(a) and 8(b) there is illustrated an interproximal brush head 54 which would be very useful in certain situations. The interproximal brush head 54 includes radially arranged discharge ducts 55 which discharge onto radially arranged bristles 56.

Needless to say, the invention is not limited to the embodiments hereinbefore described. It is envisaged, for example, that the dispenser of the invention may form a dentifrice container for use with either a conventional toothbrush or a brush head which is secured to the dispenser after the dentifrice has been dispensed on to the bristles. It is also envisaged that the rotatable base may itself be retractably engageable with a stop which limits rotation thereof to provide for a metered quantity discharge of paste.

The invention is not limited to the embodiments hereinbefore described but may be varied in construction and detail.

## Claims

1. A hand-held paste dispenser (1,20,30) comprising:-  
a paste container (2,21,31) having a discharge outlet (4,23,33/35); and  
a discharge means (3) mounted within the con-

tainer for discharging paste from the container through the discharge outlet, characterised in that, the discharge means comprises actuating means comprising a cap (5,29,39) for the discharge outlet, the cap being releasably mountable to the container.

2. A paste dispenser as claimed in claim 1, wherein the discharge means (3) comprises a piston (6) mounted within the container (2,21,31) and driven by a rotating drive member (7), and wherein said cap (5,29,39) includes means (13) for engaging said drive member (7) for rotation thereof to discharge paste from the container through the discharge outlet (4,23,33/35).

3. A paste dispenser as claimed in claim 2, wherein the cap (5,29,39) includes a male key (13) or a female recess (10) and the drive member (7) includes the other of the male key or female recess for engagement of the cap and the drive member.

4. A paste dispenser as claimed in claim 3, wherein the cap (5,29,39) includes a key (13) for engagement with a recess (10) in the drive member.

5. A paste dispenser as claimed in any of claims 2 to 4, wherein said means (13,10) for engaging the cap and the drive member is effective for one direction of rotation only.

6. A paste dispenser as claimed in claim 4 or 5, wherein said recess (10) extends in a radial direction from a longitudinal axis of the drive member (7) and includes a stop surface (11) on one side thereof and a sloping surface (12) on the other side to allow engagement for rotation of the drive member only in a direction for causing discharge of paste from the container (2,21,31).

7. A paste dispenser as claimed in any preceding claim, wherein the dispenser includes metering means (17,16) for indicating the quantity of paste discharged.

8. A paste dispenser as claimed in claim 7, wherein said metering means comprises stop means (16,25) retractably engageable with said discharge means (3) or said actuating means (5,29,39) to limit movement of said piston (6) for any one use of the dispenser.

9. A paste dispenser as claimed in claim 8, wherein said stop means (16,25) is mounted on the container for limiting rotation of said cap (5,29,39).

10. A paste dispenser as claimed in claim 9, wherein the container (2,21,31) and the cap (5,29,39) include in one or the other thereof an inter-engaging recess (16,25), and a projection (17,28) in the other thereof, rotation of the cap being limited by movement of the projection within the recess.

11. A paste dispenser as claimed in any of claims 7 to 10, wherein said metering means includes graduation markings (26) on the container

(21) for indicating the extent of rotation of said cap (29).

12. A paste dispenser as claimed in any preceding claim, further comprising an applicator head (32,53,54) for application of paste discharged through the discharge outlet (33).

13. A paste dispenser as claimed in claim 12, wherein the applicator head (32,53,54) includes bristles to form a toothbrush head having a duct (35) for delivery of paste from the discharge outlet (33) to the bristles.

14. A paste dispenser as claimed in claims 12 or 13, wherein the container (31,3) and the discharge means form a cartridge for releasable connection with the applicator head (32).

15. A paste dispenser as claimed in claim 14, wherein the cartridge (31,3) and applicator head (32) include interengageable bayonet type fittings (37,38) for releasable connection.

16. A paste dispenser as claimed in any of claims 13 to 15, wherein the duct (35) of the toothbrush head (32) is arranged to discharge dentrifice transversely of the bristles (36).

17. A paste dispenser as claimed in claim 13, wherein the toothbrush head (54) includes radially arranged bristles (56) and a plurality of radially arranged duct openings (55) for interproximal teeth cleaning.

18. A hand-held paste dispenser (1,20,30) comprising:-

a paste container (2,21,31) having a discharge outlet (4,23,33);

a discharge means (3) having a user-operated drive member (7); and

metering means (16,17) for indicating the extent of movement of the drive member (7) to allow user control of the quantity of paste discharged.

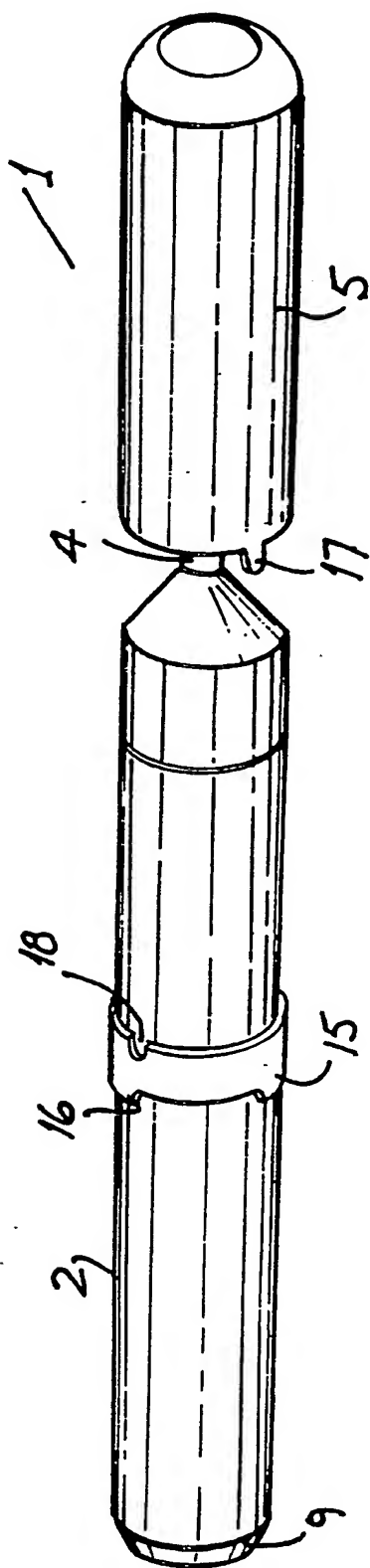


Fig. 1a

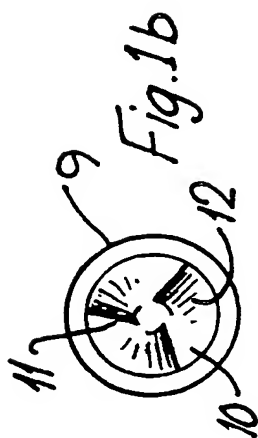


Fig. 1b

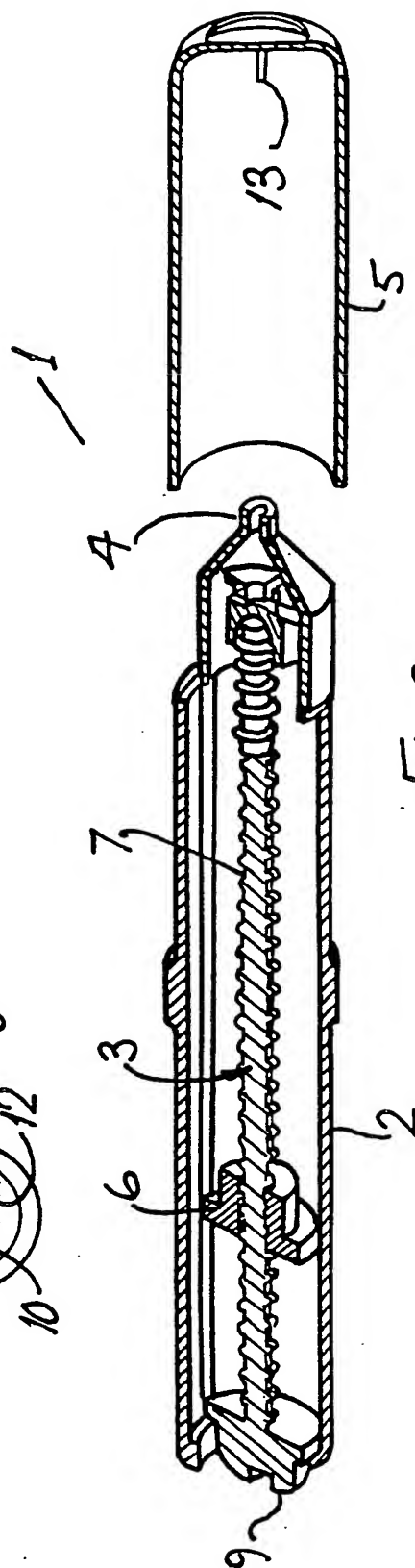


Fig. 2

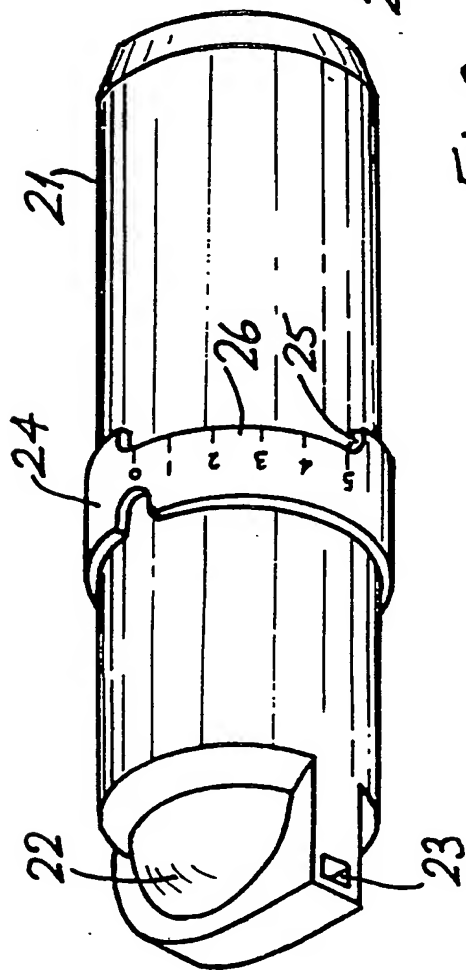
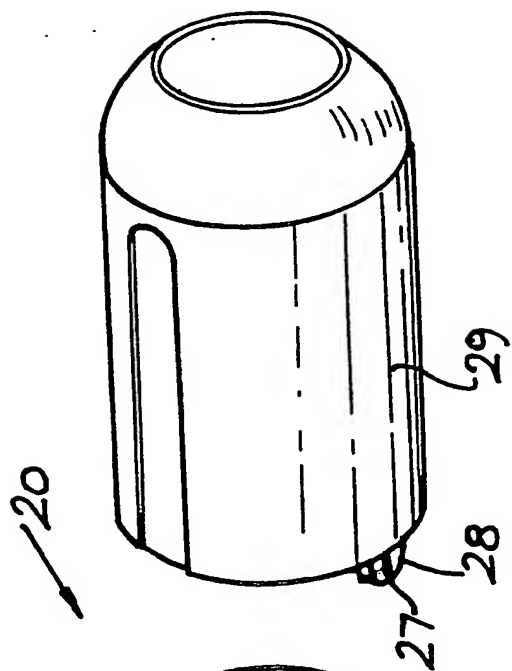


Fig. 3

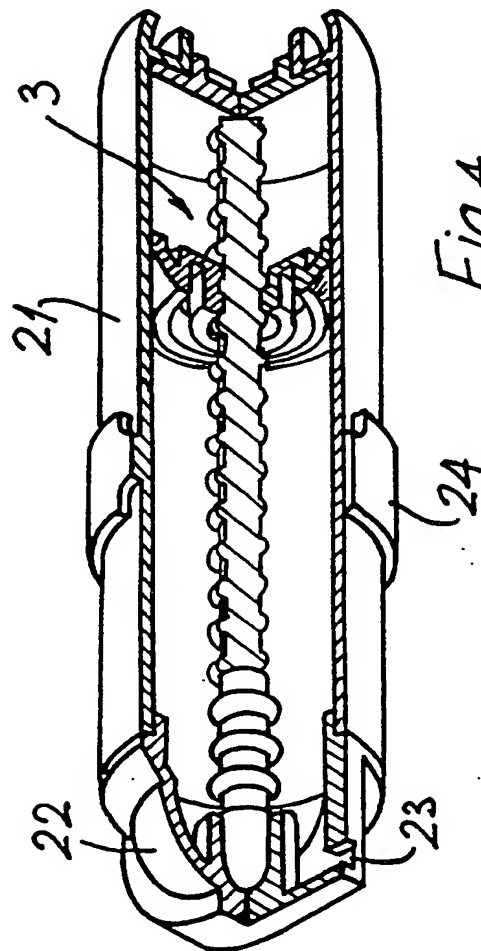
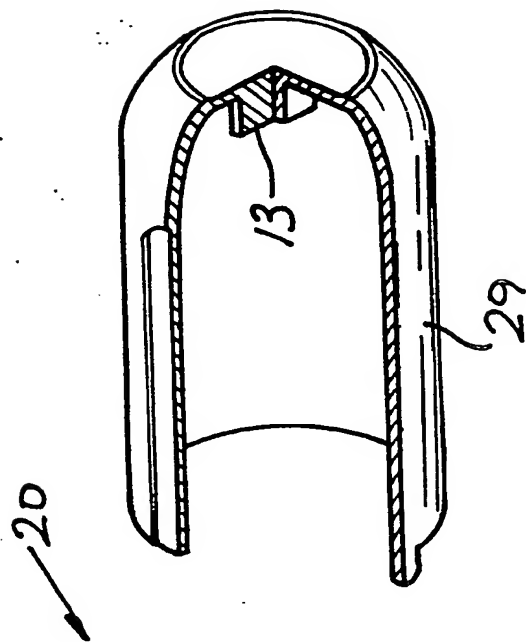


Fig. 4

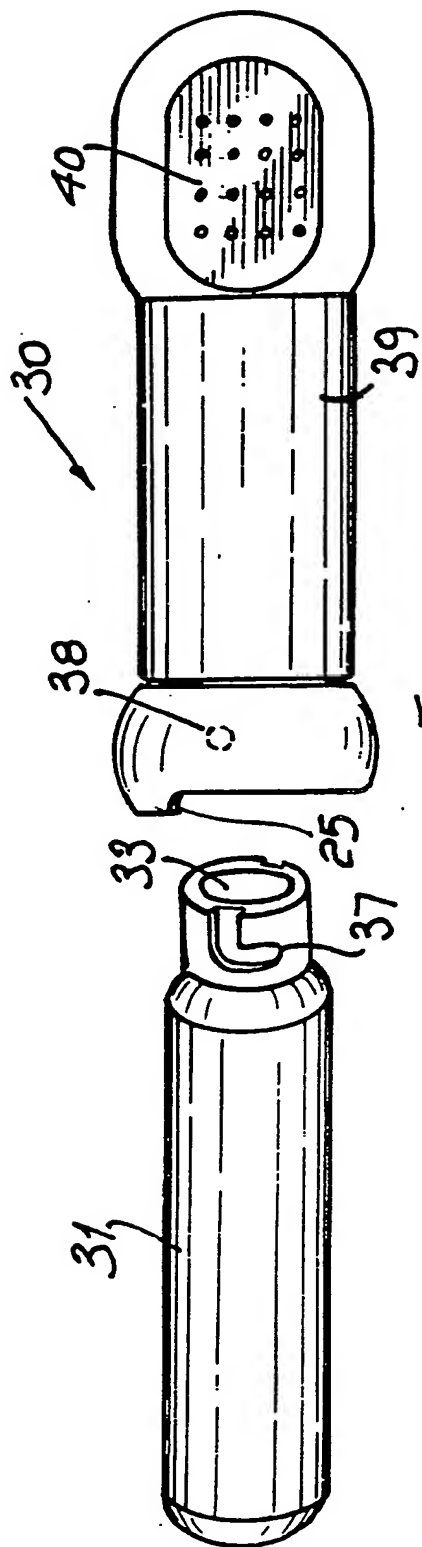


Fig. 5

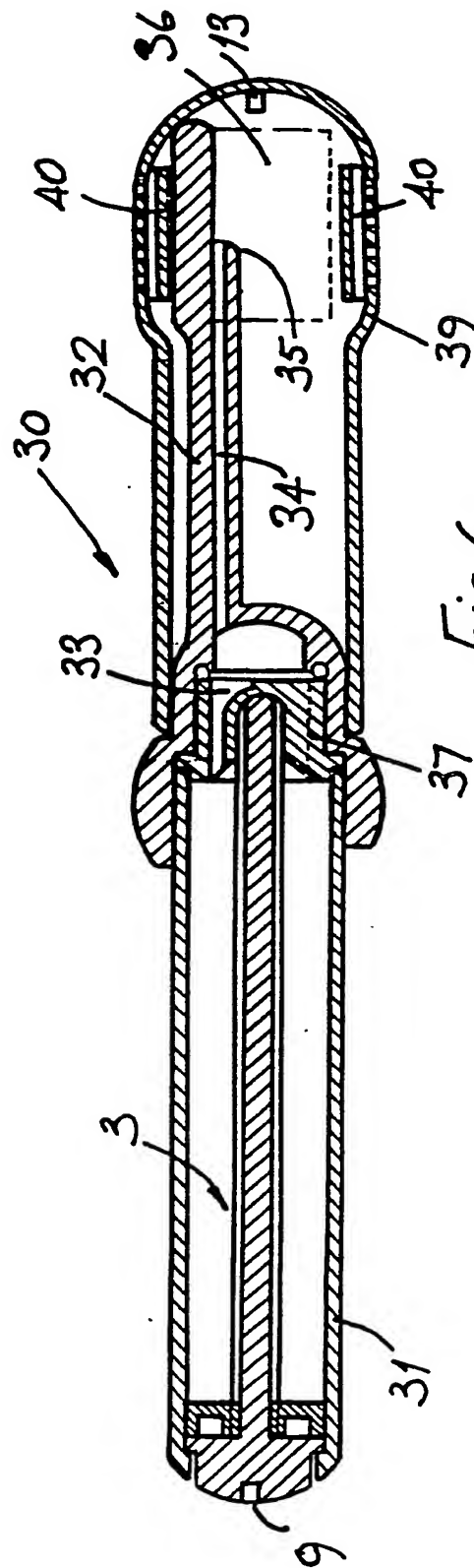


Fig. 6



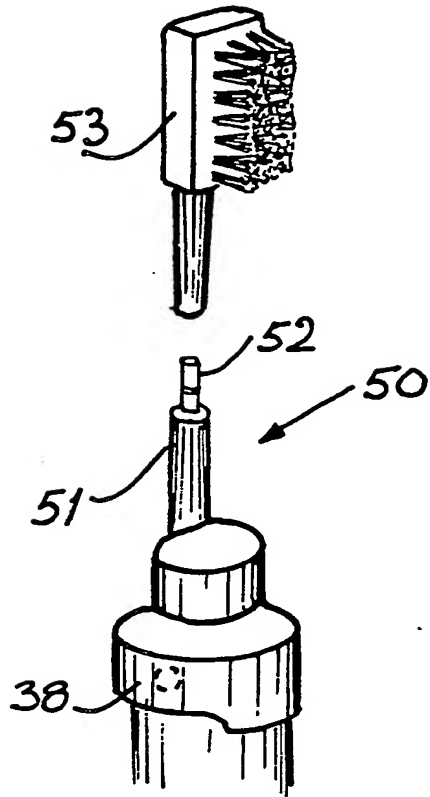


Fig. 7

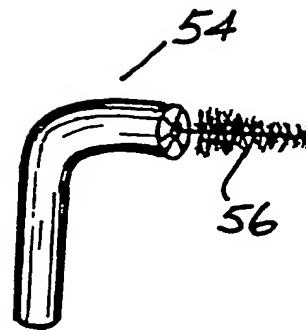


Fig. 8 a.

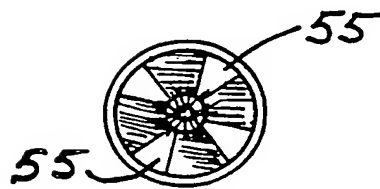


Fig. 8 b.



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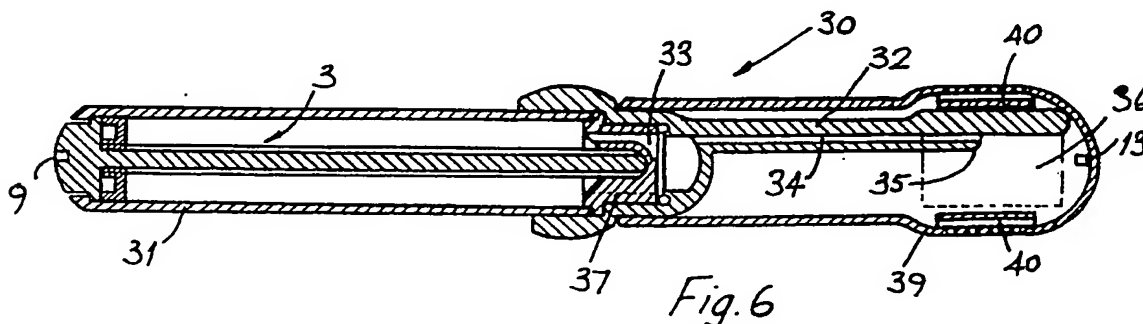
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(54) **A paste dispenser.**

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applicator head (32) to form a reservoir toothbrush. Because engagement between the cap and discharge means is required, accidental discharge resulting in blocking of the outlet and lack of cleanliness is avoided and the dispenser is tamper-proof for young children. Further, the dispenser allows control of the amount discharged which is important for avoiding waste and in discharging an exact required amount of paste.





European  
Patent Office

## EUROPEAN SEARCH REPORT

Application Number

EP 90 30 2319

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-1 466 508 (MACCAFERRI) * Pages 1,2; figures 1-3 *	1-4,12, 13,14,16	A 46 B 11/00 B 65 D 83/76
Y		2,5,6,7,8, 9,11	
X	GB-A-3 234 50 (MORNY) * Pages 1,2; figures 1-11 *	1	
X	US-A-2 656 953 (RICH) * Figures 1,2,3,5 *	18	
Y		7,11	
Y	US-A-4 013 370 (GINGRAS) * Figures 2,4; column 4, lines 10-14 *	2,5,6,7	
Y	US-A-2 926 818 (SPERO) * Figures 6,8 *	2,7,8,9	
X	US-A-3 185 345 (HUNEGS) * Figures 1,3 *	18	
X	US-A-4 595 124 (DUVAL) * Figures 4,6 *	18	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A		7,8,9	A 46 B B 65 D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 20 June 91	Examiner LOKERE H.P.
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